

THE CLAIMS

What is claimed is:

- 5 1. A method for adjusting the thickness of a thin semiconductor material layer, which comprises:
 measuring the layer to establish a thickness profile;
 comparing the measured thickness profile with stored
10 standard profiles, wherein each standard profile is stored in association with respective thickness adjustment specifications;
 selecting a stored standard profile to associate the layer with the respective thickness adjustment
15 specification; and
 adjusting the thickness of the layer in accordance with the thickness adjustment specification.
- 20 2. The method according to claim 1 wherein the thickness adjustment specifications are recipes.
3. The method according to claim 2 which further comprises establishing associations between the stored
25 standard profiles and the recipes.
4. The method according to claim 3 which further comprises establishing associations by using an algorithm having a target specification input for thickness profile established for layer fabrication.
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5. The method according to claim 4 which further comprises using identical meshes to establish the thickness measurements, the standard profiles, and the target specification.
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6. The method according to claim 4 which further comprises automatically reactivating the configuration

algorithm on each change of target specification to establish a new configuration defining correspondences between the standard profiles and the recipes.

5 7. The method according to claim 1 which further comprises storing at least one configuration associated with the thickness measurement.

10 8. The method according to the claim 7 which further comprises storing a plurality of configurations, and selecting a desired configuration.

15 9. The method according to claim 1 which further comprises classifying at least one of the standard profiles and the recipes in a tree structure defining categories and sub-categories with a desired number of levels.

20 10. The method according to claim 9 which further comprises selecting zones of the standard profile tree structure within which to undertake a search in order to select a standard profile.

25 11. The method according to claim 9 which further comprises defining the recipe tree structure by finer and finer levels of detail.

30 12. The method according to claim 4 wherein the algorithm selects categories of recipes as a function of thickness differences between the target and the standard profile to establish a configuration, without searching through all recipes.

35 13. The method according to claim 4 which further comprises:

 establishing a link between a starting level of a standard profile tree structure and an arrival level of

a recipe tree structure, such that for each standard profile belonging to a given category of starting level there exists an arrival level category of recipes;

5 searching for a recipe for a standard profile at the starting level by automatically directing the search towards the arrival level category; and

continuing the search by going deeper into the recipe tree structure to establish a configuration.

10 14. The method according to claim 9 wherein the recipe tree structure is defined by recipe parameters.

15 15. The method according to claim 14 wherein the high level categories of recipes in the recipe tree structure include:

a first high level recipe category defining a uniform thickness adjustment specification for the entire surface of the layer; and

20 additional high level categories depending on overall distribution parameters for thickness adjustment specifications over the surface.

25 16. The method according to claim 1 which further comprises applying thickness adjustments simultaneously to the layer surface, wherein the adjustments may differ depending on location on the layer surface.

30 17. The method according to claim 1 which further comprises adjusting the layer thickness by sacrificial oxidation.

35 18. The method according to claim 1 which further comprises treating batches of layers, wherein one layer thickness in the batch is adjusted by a certain given pitch while a subsequent layer thickness is being measured.

19. The method according to claim 18 wherein the layers of a given batch share the same final target thickness, and the recipe for each layer is individualized to ensure that once thickness adjustment
5 has been completed, a mean layer thickness is obtained for the batch that is as close as possible to the common target.

20. The method according to claim 2 wherein the
10 recipes correspond to at least one of uniform thickness modification across the layer, or differential thickness modification across the layer.

21. An apparatus for adjusting the thickness of a
15 thin semiconductor material layer, comprising:
thickness measuring means;
thickness adjustment means;
means for storing thickness adjustment specifications and
20 a processor unit associated with the thickness adjustment specifications storing means, with the processor configured to receive measurements made on the layer from the thickness measuring means, and to forward thickness adjustment specifications to the thickness
25 adjustment means.

22. The apparatus according to claim 21 wherein the thickness measuring means is at least one of an ellipsometer and a reflectometer.
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